

REMARKS

Claims 1-10 and 12-16, as amended, remain herein.

Claims 10 and 11 are rejected under 35 U.S.C. 112 as indefinite by the use of trademarks/tradenames. In response, the claims have been amended to use the more generic description as set forth in the product identification section underneath Table 1. Because of the title underlining in Claim 11 it has been presented as new Claim 16 rather than in the amended format. Applicants submit that the rejection has been met and that no new matter is being added.

Claims 1-3, and 5-11 are rejected under 35 U.S.C. 103 as unpatentable over Scholz et al in view of von Bonin et al and Fulmer. This rejection is traversed.

The Scholz et al patent relates to a flame-retardant coating composition. As set forth in col. 1, lines 38-45:

The object of the present invention is therefore to provide expandable coating compositions which possess flame-retardant properties but which break down without releasing halogen-containing compounds. This is achieved in accordance with the invention in that the coating compositions contain ammonium salts of alkyl phosphates as substance which is carbonized under the effect of heat and/or as expansion agent and as additional acid donor. (emphasis added)

That Scholz et al is directed to a coating composition is seen in their focus on the nature of the coating obtained. In Example 1 (which is a comparative example) they use the prior art chlorinated paraffin 50 and the composition is roller-coated onto one side of a steel panel. They describe the result as: "The surface of the coating was smooth and free from cracks."

Col. 2, lines 14-42. This is the type of smooth coating result they want. However, as quoted above, they do not want to use an ingredient which has chloro (i.e. halogen) groups in it. Thus in Example 9 they use the same coating composition as Example 4 (a comparative example), but instead of the chlorinated paraffin, they used 1.5% by weight of a monoethanolammonium salt of the Knapsack® phosphate MDE. Scholz et al do not define the composition of the MDE material.

Most of the examples use Mowilith polymers made by Hoechst. The DM 230 member in Example 1 is not defined, but the DM 60 member in Example 5 is a styrene-acrylate copolymer and the DC member in Example 6 is a homopolymer based on vinyl acetate.

The only examples of using an anionic, aliphatic polyester-polyurethane dispersion is Impranil DLP from Bayer which is in Examples 3 and 4 (comparative Examples) and in Example 9 where the coating composition of Example 4 has the 2% chlorinated paraffin replaced with the preferred monoethanolammonium salt of the Knapsack® phosphate MDE.

Applicants respectfully submit that the teaching of the Scholz et al patent is that, improved coating compositions can be obtained, which on burning will not release chlorine gas, by Scholz et al's replacement of chlorinated paraffins with a non-chlorinated component such as monoethanolammonium salt of the Knapsack® phosphate MDE, and that this coating will maintain a smooth and crack free coating surface.

There is no indication in this Scholz et al reference that the composition can be used as a low smoke, fire retardant carpet backing formulation where there is no need for a smooth surface nor the need for a crack free surface. A coating as taught by Scholz usually implies a material that resides on the surface of a substrate. In contrast, applicants' carpet backing material is expected and needs to penetrate into the carpet. A key function of the carpet backing formulation is to bind the fibers at the back of the carpet so that they will not be susceptible to "fuzzing" under the influence of wear. When the carpet backing formulation penetrates the carpet and, according to design, binds to the fibers, there is no recognizable tendency for the backing material to crack, since the fibers reinforce the backing material. The carpet with backing form a composite in which there are fibers, resin and fillers, which by design also have special activity in the event of fire. Applicants' carpet backing formulation produces a carpet that passes the strict 12-second vertical burn airline nonflammability test in FAR 25.853(a) as well as the low smoke standards, described in the initial part of the specification.

There clearly is no indication from Scholz et al that their coating composition can meet these tests. In addition it is a critical requirement of Scholz et al that their coating composition has the nonhalogenated component such as the monoethanolammonium salt of the Knapsack® phosphate MDE to improve the smooth coating surface.

To show that the Scholz et al composition does not behave as applicants' low smoke, fire-retardant carpet backing composition, the Examiner's attention is directed to a Declaration by Dr. Timothy W. Johnson filed herewith. His technical education and background are set forth in sections 1 and 2 of the Declaration.

He undertook to make the material in Example 9 of Scholz which, as discussed above, is a preferred embodiment since it replaces the 2% chlorinated paraffin with the monoethanolammonium salt of the Knapsack® phosphate MDE. The Declaration in Section 7 discusses how he made the equivalent salt of the Knapsack® phosphate MDE.

Section 5 of the Declaration first describes as Run 1 a composition according to the present invention. The presence of two minor additional ingredients is explained in that section and the smoke test results average 132 which is below the smoke value target limits based on the industry requirements as described in this section of the Declaration.

The rest of the Declaration chronicles how Dr. Johnson tried to follow the Scholz Example 9 formulation to make a carpet backing. A brief summary is:

Run 2 - using the order of the listed ingredients did not make a processable mixture.

Run 3 - using the basic order used by applicants resulted in a very thick material that could not be used for a coating which is to be applied to a carpet.

Run 4 - adding a grind aid (based solely on Dr. Johnson's knowledge--not taught by Scholz) resulted in a material that could be coated on a carpet. However, it did not penetrate into the carpet bundles and when flexed the backing cracked. Thus it is not an acceptable material.

Run 5 - following the procedure of Run 4, but with additional water. Again this is using more information than given by Scholz. The coating did not penetrate into the fiber bundles. The smoke testing resulted in a rating of 307 which is an unacceptable smoke rating since it is above the maximum target value of 200.

Run 6 - similar to Run 5, but with more water and the elimination of the Tylose thickener. Again these further modifications are not taught by Scholz. The resulting carpet was flexible and without cracking. However, the smoke test value was 257 which is unacceptable. Thus, this composition can not be used as a low smoke fire retardant backing formulation.

The Examiner's review of this Declaration is requested since it clearly shows that the Scholz formulation does not produce an acceptable low smoke, fire retardant carpet backing composition nor a low smoke, fire retardant carpet.

The Examiner recognizes that Scholz does not teach the claimed surfactants of Claim 1 nor the nylon carpet of Claims 12-15, and cites von Bonin and the Fulmer patents.

Von Bonin relates to flame retardant elements, more particularly foam mouldings which are elastic in the moist state.

The Office Action cites col. 16, lines 46-68, to show that a film-forming polyurethane dispersion has been proved to be useful. This is Example 15 where the description of this material is in the beginning of the example where it states: "A commercially available, film-forming polyurethane dispersion was diluted with water to a solids content of 20%." There is no further description of what the material is. The Office Action contends that it would have been obvious to use the polyurethane dispersion of von Bonin as a binder of choice into the composition of Scholz. However, at least Scholz has named the Impranil DLP polymer which is a dispersion containing a polyurethane material available from Bayer by which the artisan could obtain it. This broad reference by von Bonin provides the artisan with no additional information as to how this material could be selected. At most this is an erroneous "obvious to try" rejection to use the broadly defined material from von Bonin. The Gillette Co. v. S.C. Johnson & Son Inc., 919 F.2d 720, 725, 16 USPQ2d 1923, 1928 (Fed. Cir. 1990). There clearly can be no suggestion of the present formulation from this von Bonin patent when taken with Scholz.

Von Bonin additionally fails to suggest obtaining a flexible composition, which is needed for a carpet backing. The foam materials being made by von Bonin have limited uses as set forth in col. 3, line 63, to col. 4, line 3:

Fire retardant elements according to the invention can be used, for example, for sealing joints, ducts for internal or external walls, or cable strands and for protecting or insulating pipes,

load-bearing structures, partitioning, walls and containers. The fire retardant elements can be of any desired size and can be designed, for example as wallboards, components of external walls, ashlar, granules, quasi-continuous profiles, tapes, center split pipes, containers, pipe plugs or grids.

Thus Von Bonin would not be consulted to produce a low smoke, fire retardant carpet backing composition.

The Fulmer patent is not directed to a carpet backing formulation to meet airline smoke and flammability standards. Instead it is directed to making a better dual layer mattress or the like that is resistant to accidental or intentional ignition. The inner core of the mattress is a standard polyurethane layer that has mattress-like properties. The outer coating is foamed in place around the inner core and it makes use of a polyurethane prepolymer that can be mixed with large quantities of water and yet still form a polyurethane foam. See col. 9, lines 53-63, which states:

The present hydrophilic polyurethane prepolymer is advantageous for forming the protective layer. Due to its hydrophilic nature, it can be easily mixed with excessive amounts of a water slurry carrying a large concentration of fire-retardant filler particles. When the prepolymer is added to the large amount of slurry, the prepolymer disperses and spreads out over the larger liquid volume and forms a foam which encompasses all of these fire-retardant particles. Although much of the water is removed upon drying, the particles are all retained in the resulting foam matrix structure.

Because of the large volume of water, a large amount flame retardant material can be added into the aqueous formulation to provide a high degree of flame retardancy to the foamed product.

The Office Action cites col. 7, lines 4-8, for the use of surfactants to insure mixing of components "specifically carbon compounds such as saccharides." The suitable saccharides are defined further down in col. 7 at lines 24-28 as:

Suitable saccharides include: starch, sorbitol, dextrin, flour, cellulose (including wood cellulose and its ground form, known as wood flour), extracted Douglas Fir bark, mannitol, sucrose, inositol and arabinose.

This list does not include the preferred polysaccharide resin Lorama ECO R1.

Thus, Fulmer and Scholz relate to significantly different subject matter. Scholz et al relates to coating compositions that require a smooth coating and a crack-free surface, and in contrast Fulmer relates to foams made from a specialty type of polyurethane prepolymer which can be foamed in large amounts of water. Since these references relate to such different polymeric areas, the two cannot be effectively combined. Even if combined, modification of the Scholz coating by the foam of Fulmer does not result in applicants' low smoke, flame retardant carpet backing composition or the resulting carpet of the present claims.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scholz et al in view of von Bonin et al and Fulmer as applied to claim 1 above, and further in view of Trocino et al. The Office Action refers to Trocino as showing polyols being added to fire-retardant compositions to improve flame retardancy (col. 3, line 63; col. 4, line 5), and that



polysaccharides are suitable for this purpose. However, Trocino does not overcome the deficiencies of the other references as discussed above as it does not relate to the adhesive carpet backing binder composition as presently claimed.

Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scholz et al in view of von Bonin et al and Fulmer as applied to Claim 1 above, and further in view of Shore. This rejection is traversed.

As argued by the Examiner the Shore patent discloses flame-retardant polyamide carpets which are prepared from polyamide fibers having flame retardants additives added to them. Nothing in Shore suggests the composition presently claimed or of the ability to produce a resulting smoke with a specific optical density of not greater than 200 when tested in accordance with the Airbus test methods. Thus applicants respectfully submit that the addition of Shore to the other cited references provides no suggestion of the carpet as set forth in these claims.

Applicants respectfully submit that the present application is now in condition for allowance. Accordingly, the Examiner is requested to issue a Notice of Allowance for all pending claims.

Should the Examiner deem that any further action by the applicants would be desirable for placing this application in even better condition for issue, the Examiner is requested to

telephone applicants' undersigned representative at the number listed below.



Respectfully submitted,

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